

REMARKS

Status of the Claims:

Claims 1-17 and 70-71 are withdrawn with traverse due to a restriction requirement. Claims 18-69 are pending and stand rejected. Claims 72-75 are canceled herein. New claims 76-79 are added herein.

New claims 76-79 are being presented at this time to more completely cover a particular aspect of Applicant's invention. Further, it is submitted that new claims 76-79 raise no new issues and do not require the Examiner to conduct an additional search, since the claims merely clarify the subject matter already presented. Support for claims 76-79 is found, for example, at page 20, lines 24-26 and Figure 4; page 16, lines 10-13; and Table 3.

Prior Art Rejections:

Claims 72-75 were rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent 6,068,884 ("Rose et al.") and U. S. Pat. No. 6,410,463 ("Matsuki"). Claims 72-75 are canceled herein.

Claims 18-47, 53-66, 68, 69 and 72-75 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,147,009 ("Grill et al.") in view of Rose et al. (the citation of Rose et al. being within the body of the rejection although missing from the introductory paragraph of the rejection). This rejection is respectfully traversed. Neither the patents cited in the outstanding Office action, nor any other evidence of record, establish a *prima*

facie case of obviousness.

Grill fails to teach the use of only an inorganic fluorine source so as to produce a film *wherein substantially none of the fluorine is bonded to the carbon*. The Office Action at page 5, second paragraph, acknowledges that Grill is silent as to the particular fluorine source to use, and proposes to remedy this deficiency of Grill with the alleged teachings of Rose et al. at column 6, lines 40-50. Rose et al., however, does not teach the use of solely inorganic fluorine sources to produce an organosilica glass film *wherein substantially none of the fluorine is bonded to the carbon*. Rose et al. merely lists certain inorganic fluorine sources as well as organic fluorine sources as being suitable fluorinating materials (column 6, lines 43-44). Indeed, Rose et al. may teach away from Applicant's claimed invention in that the films are 'inorganic/organic hybrid films' comprised of "silicon, oxygen, and/or nitrogen, carbon *and* hydrogen; or alternatively silicon, oxygen and or nitrogen, carbon *and* fluorine" (see col. 3, lines 54-57)(emphasis added). Rose describes the film as formed having "a backbone made substantially of Si-O-Si or Si-N-Si groups with organic side groups attached to the backbone" (see col. 3, lines 7-10 and col. 3, lines 54 -67 through col. 4, lines 1-7)." According to Rose, the organic side groups "are comprised substantially of methyl (CH₃) or *carbon trifluoride (CF₃) groups*" or "*contain carbon atoms*" (col. 4, lines 18-2 and column 14) (emphasis added)." Therefore, one of ordinary skill in the art at the time of the invention would not have been reasonably motivated by the teachings of Rose et al. to substitute only an inorganic fluorinating gas into the process of Grill to provide a film *wherein substantially none of the fluorine is bonded to the carbon*. Accordingly, reconsideration and withdrawal of the rejection of claims

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18-47, 53-66, 68, and 69 under 35 U.S.C. § 103(a) over Grill et al. in view of Rose et al. are respectfully requested.

Claims 48-52 and 67 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable Grill et al. in view of Rose et al. and Lee et al. This rejection is respectfully traversed. Grill et al. fails to render the claimed invention obvious for at least the reasons discussed above. Rose et al. fails to remedy the aforementioned deficiency of Grill et al., since Rose et al. also fails to teach the use of solely inorganic fluorine sources and does not produce a film *wherein substantially none of the fluorine is bonded to the carbon*. The cited teachings of Lee et al. relating to porogens do not remedy the aforementioned deficiencies of Grill et al. and Rose et al. Lee et al. also fails to teach the use of solely inorganic fluorine sources in the production of fluorinated organosilica glass films. Thus, the proposed combination of reference teachings fails to disclose all of the limitations of the claimed invention. Accordingly, reconsideration and withdrawal of the rejection of claims 48-52 and 67 under 35 U.S.C. § 103(a) over Grill et al. in view of Rose et al. and Lee et al. are respectfully requested.

Applicant respectfully rebukes the Examiner's assertion in paragraph 2 of page 5 of the Office Action that "as none of the silicon or fluorine precursors for forming the film contain C-F bonds, the deposited film would not contain C-F bonds" by providing references that show the formation of C-F bonds after exposure to SiF₄- or NF₃- containing plasmas in the presence of carbon atoms such as those provided, for example, by a photoresist material. By analogy, the organosilane or organosiloxane precursors may also provide carbon atoms within a deposition plasma containing SiF₄, NF₃, and/or other inorganic fluorine sources. For example, the

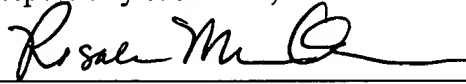
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reference, Sparks, D.R., "Plasma Etching of Si, SiO₂, Si₃N₄, and Resist with Fluorine, Chlorine, and Bromine Compounds", *J. Electrochem. Soc.*, Vol. 139, No. 6, June 1992, pp. 1736-1740, describe the formation of CF₂ peaks at 292 and 256 nm and at 321 and 292 nm as determined by optical emission spectroscopy after etching photoresist with SiF₄- and NF₃-containing plasmas, respectively. Other references that are included herewith describe reacting NF₃ with a carbon-containing reagent to form one or more compounds containing C-F bonds. See, for example, Dresdner, R.D., et al., "Fluorocarbon Nitrogen Compounds. V.1 Nitrogen as a Regent in Fluorocarbon Chemistry, *Nitrogen as a Reagent in Fluorocarbon Chemistry*, Nov. 20, 1960, pp. 5831-34; USAF Propellant Handbooks Volume III, Part A, Nitrogen Trifluoride, Systems Design Criteria, January 1978, Sections 3.5.5.3, Table 3.5-4, 4.9.2, and Table 4.9-1; and Takagi, T., et al., "The Synthesis of Perfluoroamine Using Nitrogen Trifluoride", *Journal of Fluorine Chemistry*, 2000, pp. 15-17.

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested. Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

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Respectfully submitted,



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encl.:
Petition for Two Month Extension of Time
References